If you haven’t seen a total solar eclipse, put it on your bucket list.

For a month, I had done numerous interviews with media in Arizona, around the United States, and abroad. I had told people what to expect, as well as what not to expect if they weren’t in the path of totality. Given my scientific interest in the Sun and Sun-like stars, it had been fun to talk about the outer atmosphere of the Sun, visible to the unaided eye only during the total phase of a solar eclipse. And we had discussed the logistics of managing two events for huge crowds simultaneously. As I had long suspected, this was easily the highest-profile astronomical event since the 2015 New Horizons flyby of Pluto.

Sixteen months of planning all came to a head starting at 9:06 a.m. PDT on August 21. There were cheers and applause from the 3,500 people around the football field and in the grandstand as the first little bite out of the Sun appeared.

Then came a 70-minute slow burn, as the Moon crept steadily across the Sun.

Gerard van Belle, Michael West, and I were broadcasting on air and online with the Science Channel, and our staff, advisory board members, and volunteers were scattered around the field with telescopes and talking with our guests. Not a lot changes between a 10% eclipse and a 70% eclipse, as I had noted in all those media interviews to try to manage expectations about partial eclipses.

But when you’ve plunked yourself right on the centerline, things get very different, very fast. From about 15 to five minutes before totality, everyone began noticing the lighting getting progressively weird: dusky yet unlike dusk, eerie and lifeless. As if in response,
I went down to the Madras Performing Arts Center (PAC) on Sunday, August 20, to give a talk about eclipses before our evening star party for the community. I must admit to feeling a bit of trepidation walking around the football field and stopping in on the buzz of staff activity at our command center in the PAC. Looking at the incredible number of moving parts, and knowing there were plenty on Mars Hill back in Flagstaff, I wondered how it was all going to come off that evening and the following morning.

Once again, it was silly to have any doubt in the Lowell team. For a week after I got back to Flagstaff, I was practically mobbed around town by folks gushing about the eclipse events, whether they had been in Madras, seen the Science Channel broadcast we did on the morning of the 21st, or had joined the festivities up here on Mars Hill. Emails and letters have poured in from around the country, many of them asking where we’re going to set up for the April 8, 2024 eclipse. My Twitter feed had been lit up for a week with delight over the eclipse glasses we sent out to all our members.

Everyone at Lowell focuses intently on his or her principal responsibilities, be they research, outreach, finances, fundraising, technology, buildings and grounds, you name it. But during an event like this, which required heavy coordination between multiple departments, we’re at our finest. Great job, team! 😊

A Moving Experience

I have been a passionate amateur astronomer since I was ten, and a Lowell Advisory Board member for many years, but had never witnessed a total solar eclipse. I am so happy that my wife Bridget and I signed up for one of the most moving experiences of our lives. A remote town, an amazing celestial alignment, and thousands of people were all bound by a common appreciation for the awesome spectacle of a solar eclipse. Words can’t describe what it’s like when the Moon fully covers the Sun, the temperature drops, and the stars and planets come out mid-day!

I brought an 80-millimeter telescope to the event and I captured a series of eclipse images with a DSLR, but my greatest joy came from offering close-up views of the Sun to whomever wandered by. We took the advice of seasoned eclipse watchers and enjoyed totality with our eyes only. Sharing the eclipse with the Lowell family in Madras, Oregon was a once-in-a-lifetime experience. The hard work and passion of the Lowell staff, volunteers, board members, and supporters was doubly inspiring!

— Mike Beckage, Advisory Board Member

Mike Beckage has loved astronomy since the age of ten, when he saw the Moon through a neighbor’s telescope in California. The following year he joined an astronomy club and he’s been looking up ever since.
The Great American Eclipse celebration at Lowell Observatory, Mars Hill’s counterpart to Lowell’s Solar Eclipse Experience in Madras, Oregon, drew just over 1,300 excited visitors to the observatory’s campus on the morning of August 21. Undaunted by the partly cloudy skies that are common to northern Arizona in the summer months, eclipse seekers of all ages roamed the campus enjoying activities that included games and face painting, science demonstrations, live streaming of totality from Lowell’s event in Madras, and eclipse viewing.

In an impressive team effort, about 40 staff and volunteers were on hand to greet visitors and share the eclipse experience with the general public and several groups of local elementary school students. Retail staff arriving at 6:00 a.m. to prepare for the day found a line of people already gathered in front of the Steele Visitor Center. A steady stream of guests followed, bringing with them “a rush of anticipation, excitement and wonder”, according to one retail staff member. The arrivals began winding down by 11:30 a.m.

Business office staffer Natalia Hidinger took on the task of running a satellite sales station at the bottom of Mars Hill, near a special eclipse shuttle pickup area, to accommodate people who were primarily interested in a last-minute purchase of what was clearly the month’s trendiest item, eclipse viewing glasses. But not everyone waited until the eleventh hour to make their purchase; the gift shop reported selling more than 16,000 pairs of eclipse glasses in July and August!

The marquee activity—eclipse viewing through several solar telescopes and pinhole viewers—was a bit challenging as Lowell educators and volunteers stationed throughout the campus played an ongoing game of cat and mouse with the clouds, which parted just in time to reveal the Sun at 70% maximum coverage. Lowell educator Alma Ruiz-Velasco reported hearing “human as well as dog howling” from her station near the Clark Telescope dome as the eclipse reached its maximum.

Elsewhere on campus volunteer Gene Hill, a retired school administrator, enjoyed the morning with third- and fifth-grade students and teachers from Kinsey and Sechrist elementary schools in Flagstaff. As the group watched the Moon’s shadow grow and diminish throughout the eclipse, Hill said common reactions from both students and teachers were “Wow!” and “Cool!”. Since the students were gathered in an area away from the public, each was able to look through the solar telescope multiple times, in addition to using their eclipse glasses.

And what’s a spectacular celestial event without spectacular eats! Three food trucks parked near the Clark Telescope dome kept visitors and staff fueled and happy with a selection of delicious fare, the perfect addition to an extraordinary day on Mars Hill. Retail associate Florence McGuire summed up the celebration: “For people who were unable to travel to the path of totality, the Lowell event on Mars Hill was the next best thing!”

Eclipse Merchandise on Sale

Did you miss your chance to get some eclipse swag? Many of the items that were available onsite in our gift shop are now available online at a deep discount! Merchandise available includes limited edition hats, t-shirts, water bottles, and mugs. Get them while supplies last!

www.myastronomyshop.org
One of the many goals of the Lowell Observatory Solar Eclipse Experience was getting Lowell Observatory national, if not international, exposure. To accomplish this, we knew we would not only need an awesome event, but also the right people at that event: the journalists, the bloggers, and the influencers.

Only minutes after sending out an invitation to a list of international media contacts, the RSVPs started to flood in. Media continued to sign up for credentials up until the day before the big event. We racked up a total of 64 registered media personnel, some from hometown outlets including the Flagstaff Business News newspaper and National Public Radio (NPR) affiliate KNAU. Many came from outside of the United States, from countries including England, Australia, France, Ireland, Israel, Canada, India, and Indonesia. Among some of the other U.S. outlets were the Wall Street Journal, CBS News, Huffington Post, Boston Globe, and San Francisco Chronicle. We also had several ABC news channels from across the nation. And that’s not to mention our partnered stream with the Science Channel being viewed by more than 1.7 million people.

As we still settle back into the daily work schedule, it’s clear from rave reviews and new followers on social media that the Great American Eclipse was a great success for Lowell Observatory.

By Molly Baker, Communication Manager

---

Partnering with Celestron

The Science Channel’s broadcast of the Lowell Observatory Solar Eclipse Experience was made possible by an old friend, Celestron. For years, Lowell astronomers used Celestron telescopes for observing occultations, and the outreach staff has incorporated Celestrons for public telescope viewing. For the 2017 eclipse event in Madras, Celestron donated a six-inch Schmidt-Cassegrain telescope, solar filter, and an Advanced VX tracking mount. Volunteer Bill Ferris operated this system atop the broadcast booth at Madras High School, with live video fed to the Science Channel broadcasting outlets. Celestron also donated a 90-millimeter refracting telescope for a raffle at the event.

Lowell Putnam was on hand for the raffle prize drawing of the Celestron 90-millimeter telescope. Credit: Bruce Kosaveach

---

Gift Shop Sales for Eclipse

The eclipse generated tremendous transactions for Lowell’s Starry Skies Shop during the month of July.

Supplies including t-shirts and those marvelous solar eclipse viewing glasses were hot items, and sales for the month totaled nearly $117,000 (compared to $39,000 for August 2016). This included a whopping $42,000 for the glasses alone! Meanwhile, the gift shop at the Lowell event in Madras (pictured above) generated an additional $27,000.
The Madras High School football field was a perfect venue for Lowell’s eclipse event, with easy access and unobstructed views of the sky. It also provided ample space for our three thousand-plus guests to set up their own telescopes and lawn chairs or simply spread out blankets on the ground.

The Lowell Solar Eclipse Experience – Two Minutes We’ll Never Forget

By Lisa Actor, Deputy Director for Development

“Once you’ve seen a total solar eclipse, a partial one will never be the same.” That’s what experienced eclipse chasers claimed. They’re right! Everything changes the moment the Moon swallows the last sliver of the Sun. The world goes dark. The temperature drops, and a sunset glow wraps 360 degrees of horizon. And the most amazing spectacle—the Sun’s corona—replaces the Sun in a darkened sky.

Six hundred Lowell members from around the country joined three thousand guests, two dozen Lowell staff and astronomers, and more than 100 volunteers to turn the spectacle into a communal astronomy experience on the Madras High School football field on Monday, August 21. All in attendance agreed. Those two minutes were transformational.

The Lowell Observatory Solar Eclipse Experience began as a plan to host a solar eclipse event for a few hundred Lowell members. All of that changed the day in July 2016 when we contacted the City of Madras. “We are looking for an outdoor place that has capacity for about 300 people,” wrote Philanthropy Manager Todd Gonzales in an email to the city’s director of economic development. Within 12 hours he received a response copied to Madras community officials, from the city administrator to the director of the chamber of commerce. “Please come,” they said. “But can you host an event for several thousand?”

We considered the challenge. Could our small nonprofit provide a high-quality event for Lowell members and gain some national publicity for Lowell Observatory, while helping this rural Oregon community host an astronomical event promising to bring more than 100,000 people to their town? We projected the cost to Lowell, organized a committee of staff, took a deep breath, and said, “yes” to the city leaders of Madras.

The Science Channel signed on as a partner, promising to beam Lowell’s Solar Eclipse Experience into 70 million homes. Seattle’s Pacific Science Center asked if they could bring their VIP supporters to our site. Safeway offered chilled water and food for our volunteers, and Celestron provided telescopes.

Our event website appeared on all the eclipse websites. People started buying tickets. We were pleased to see ticket sales and member RSVPs pick up as spring months passed. An additional 132 eclipse seekers became new Lowell members.

On August 21, 2017 a line of people wrapped around the Madras High School performing arts center before 6:00 a.m. Excited eclipse chasers of all ages, many carrying telescopes, came to view the eclipse, hear Lowell astronomers speak, participate in science experiments, and enjoy a one-day astronomy festival they’d never forget.

We offer a special thanks to our core eclipse team: Sonja Gonzalez, Mica Gratton, and Todd Gonzales. We also wish to thank Lowell Observatory Director Jeff Hall, who encouraged us to make it happen.

Finally, thank you to all who joined us in Madras, Oregon on August 21. We hope to see you at the 2024 Lowell Solar Eclipse Experience. And for those who missed the 2017 eclipse, mark your calendars now. You won’t regret it! 😄
Top Left: The long line of people waiting to get into the Lowell Observatory Solar Eclipse Experience when the doors opened at 6:00 a.m. Thanks to our staff and volunteers, we were able to move everyone in quickly.
Credit: David Actor

Top Right: Astronomer Larry Wasserman giving a talk in the Madras High School Performing Arts Center on “Things That Go Bump in the Night—The Science of Eclipses, Transits and Occultations”. This was just one of several talks throughout the day.

Middle Left: Photojournalist Stan Honda (left) and Aubrey Gemignani of NASA (far right) set up their cameras. Honda took some of the most widely circulated photos of the eclipse at Lowell’s event.

Middle Right: A family tests out their eclipse glasses early in the morning.

Bottom: People claim their spot on the Madras High School football field.

Unless otherwise noted, images by Sarah Gilbert
Top Left: In this image of totality, solar prominences can be seen in pink around the edges of the Sun. (Credit: Len Bright)

Top Right: Many guests brought their own telescopes to view the eclipse. One way to view the Sun safely was to place a mylar sheet over the lens of the telescope.

Bottom Left: Director Jeffrey Hall and Astronomer Gerard van Belle served as on-air personalities for the Science Channel livestream. (Credit: Stephanie van Belle)

Bottom Right: The crowd reacts to totality.
By Bonnie Stevens, Editor, Flagstaff Business News

If location, location, location applies to lemonade stand success, best friends Ellia Williams, age 9, Lexi Arias, age 8, and little brother Evan Arias, age 6, may well be the smartest and youngest entrepreneurs in the path of totality. Their pop-up street-side business, Solar Sips, no doubt brought in enough revenue the day before the total solar eclipse for them to achieve their financial goals: Ellia plans to use the money for a Hoverboard; Lexi wants an eclipse T-shirt; and Evan will be investing in an apple tree.

“We charged $1 for a Costco-size cup of pink lemonade,” said Lexi, “but most people gave us more.”

“We’ve made about $150 so far,” said Ellia, who acknowledged that cuteness sells. “The BBC was just here.”

Solar Sips was located about a block from ground zero, Madras High School, where Flagstaff astronomers set up solar telescopes and two days of free public education presentations with the Lowell Observatory Solar Eclipse Experience.

In the center of Madras, many more small businesses were profiting from the influx of visitors. NASA-approved solar eclipse glasses were sold from the back of vans; a microbrewery poured Apocalypse IPA, and Dairy Queen franchise owner Frances Millard pulled ice cream out of the refrigerated trailer she rented to store the extra 360 gallons ordered in anticipation of Blizzard-loving crowds.

Thomas and Leora Strong were capitalizing on the world’s fascination with the eclipse and the local love for Sasquatch.

The two printed up nearly 600 t-shirts with Leora’s design that combined both of these rarely seen phenomena. Leora was also selling her unique jewelry creations. They were counting on the astronomical activity to help put her through nursing school.

Hotels were full. Some, like the Inn at Cross Keys Station, were booked years in advance. And restaurants were slammed. The Great Earth Café and Market did a month’s worth of business in two days. Co-owner Gary Boyd said the benefits extended far beyond the cash register.

“More than that is what the eclipse did for the community and the staff. It was fun!”

Madras Chamber of Commerce Executive Director Joe Krenowicz said the town started planning for the celestial impact about two years ago with Lowell Observatory. “Having Lowell’s presence and the ability to say, ‘Madras is scientifically important and nationally recognized as the place where astronomers are and where you should be as well,’ really says something.”

The planning initiative included more than 75 businesses and organizations. Krenowicz estimates the economic impact at $5 million across a ten-day period.

Although the Moon and eclipse chasers have moved on, Krenowicz says the Lowell Experience will have a lasting effect on the community. “We’ll see a lot of kids with an interest in science because of what Lowell brought here. We all benefited from it.”

Eclipse Projection a Hit in Madras

At Lowell’s Madras event, Gretchen Schindler and Dorothy Ritchey operated a popular station for viewing projected images of the partially eclipsed Sun. Crackers, kitchen colanders, cheese graters, artificial tree branches with leaves, and even straw hats proved ideal as pinhole viewers. Also, Gretchen created printed patterns on index cards, with shapes such as bears, trees, hearts, and stars. Guests then poked holes through the cards to make patterned pinhole viewers. Kids especially enjoyed this activity and the chance to make their own solar viewing devices.

Ritz and Saltine crackers made for simple pinhole viewers during the partial portion of the eclipse.
Bill Ferris sits on the roof of the broadcasting booth at the Madras High School football field. To the left is the Celestron telescope he operated for the Science Channel’s live video feed. On the right is a Nikon camera with 700mm telephoto lens that Bill used to take still images of the eclipse.

Astronomy Comedy
by Jury Judge (Educator Briana Jameyson)

Driving through five states without sleep was worth it. Right, Claude?

Thanks from Pacific Science Center

The moment of totality was completely breathtaking. To see the partial phase give way to the entirely unique and nearly indescribable moment of totality was a memory that will last a lifetime. To be among a number of other individuals who were equally awe-inspired made the experience so much better.

Many thanks to Lowell Observatory for their excellent job hosting our group from Pacific Science Center. We are always happy to journey far and wide and we truly loved being partnered with Lowell Observatory for this monumental occasion.

— Michael Tessier, Pacific Science Center Discovery Circle Manager

Ferrises Return to Lowell for Madras Event

By Kevin Schindler, Historian

We were pleased to welcome Bill and Alice Ferris and son Matthew to the Madras event, where they helped pull off this astounding event. Alice, who oversaw our fundraising and membership efforts in the late 1990s, now co-runs a philanthropy and strategic planning consulting firm, GoalBusters Consulting. During the eclipse, she served as an emcee on the football field, announcing programs and other activities, thanking donors for their support, and generally keeping the event moving along. She even gave traffic reports after the event ended.

Alice’s husband, Bill, also played a key role in the event. Bill worked as an educator in Lowell’s Public Program years ago and now is manager of Television Services at Northern Arizona University. Bill is an avid amateur astronomer and photographer and used his expertise in these areas to operate the telescope used for the Science Channel’s live feed of the eclipse. He also took pictures and interviewed participants for a program he plans to produce that highlights the Lowell Observatory Solar Eclipse Experience.

Not to be forgotten, Bill and Alice’s teenage son, Matthew, also helped on the field that day. Thanks to the entire Ferris clan for their efforts on behalf of Lowell!
the whole arena, which for an hour had been buzzing with conversation, became subdued, amplifying the ghostly effect.

Perhaps it’s the suddenness with which the hammer drops that makes it so profoundly affecting. Darkness closes in—fast. The temperature plummeted on the field, it went from a warm sunny day to decidedly chilly mid-fifties.

The silence gave way to cheers and applause as totality arrived. The Sun’s corona was in fine form, extending well outward in beautiful streamers. An orange-pink hue of sunset ringed the horizon beyond the limits of the Moon’s shadow. After about 30 seconds, the hubbub died down again as, I think, many became overwhelmed by what they were seeing.

Totality’s end was beyond spectacular. First, the solar chromosphere became especially apparent; and there we all were, looking at hydrogen atoms with our own eyes, doing just what quantum mechanics says they’ll do, radiating in a gorgeous pink arc. Then, as totality ended, a brilliantly dazzling point appeared, growing steadily, looking almost alive, flooding light across the sky. It was one of the most beautiful things I have ever seen. Gerard and I were live with the Science Channel the whole time, and it was quite the trick to maintain coherent commentary while witnessing Nature at its absolute, gob-smacking finest.

Wandering around the field as the world gradually returned to normal, guest after guest came up to me. Many were almost speechless; a few had tears in their eyes; all expressed gratitude to have been part of it. I felt honored, and lucky to do what I do and to be able to help bring such a profound experience to so many. Our weary world needs more such moments.

So yeah, put a total solar eclipse on your bucket list. Seriously.

---

What You’re Saying About the Eclipse

“It was the most beautiful, most wondrous, most awesomest thing I’ve ever seen in my life!”

— Griffin, age 11

“I’m a member, happened to be in Portland for the days preceding and in Las Vegas the day of. Thank you for streaming from Madras.”

— Laura, on Lowell Facebook page

“The eclipse was so cool and the program I saw on Friday night got me excited about space. I used to want to be a doctor like my mom but now I want to study space.”

— Brianna, age 10

---

Flagstaff Educators at Madras Event

A contingent of Flagstaff educators helped with the Lowell Observatory Solar Eclipse Experience in Madras. Dave Thompson and Christine Sapio led a group from NAU’s Teach, a program of Northern Arizona University Center for Science Teaching and Learning. The goal of this program is to train secondary science and math teachers, and the eclipse offered a perfect opportunity for this. NAU sophomores offered several space-themed activities that were popular for event guests.

Meanwhile, Rich Krueger, Science and Engineering Instructor at the Flagstaff Arts and Leadership Academy (FALA) took a group of nine former and current students to Madras who set up telescopes for the free public star party the night before the eclipse, and then carried out several experiments on eclipse day. The highlight of this was an activity to observe the warping of space-time that Albert Einstein famously described in his general theory of relativity. The trip proved quite an experience for the students, as they were able to enjoy not only teaching guests about astronomy, but also camping near the school.

Rich Krueger of the Flagstaff Arts & Leadership Academy tests out eclipse glasses.

Credit: Stan Honda
At the conclusion of the August 21 eclipse, several chants of “let’s do it again,” filtered through the crowd. This harbored (at least for one person) memories of Chicago Cubs baseball legend Ernie Banks, who famously uttered, “let’s play two” because, hey, one of something as special as a ballgame (or a total solar eclipse) just isn’t enough.

Of course, eclipses aren’t nearly as common as baseball games and a quick repetition is usually not in the cards. While total solar eclipses occur on average about once every 18 months, the path from which such events are visible is narrow and varies with each eclipse, so total solar eclipses cross the same geographical area on Earth only about once every 375 years. Arizona is in the middle of a 399-year wait; it hasn’t witnessed a total solar eclipse since Thomas Jefferson was president back in 1806 and will have to wait until 2205 to see the next. Only two years later, on November 20, 2207, Arizona will then experience another one. This two-year separation is about as close as the Sun, Moon, and Earth come to “playing two”, at least in terms of total eclipses of the solar variety.

This year’s total solar eclipse was the first one to hit United States soil in 16 years (a 1991 event crossed over Hawaii), the first to reach the continental United States in 38 years, and the first to cross the continental United States, from the Pacific to Atlantic oceans, in 99 years. While Arizona’s hiatus will continue, the world, as well as the United States at large, won’t have nearly as long a wait. The next total solar eclipse is visible from the South Pacific Ocean, Chile, and Argentina and comes on July 2, 2019. The next one to hit the United States is only seven years away. That total solar eclipse happens on August 8, 2024 and, like the 2017 event, will cross over parts of 14 states. Contrary to this year’s path of totality that stretched from Oregon in a southeasterly direction through South Carolina, the 2024 one will enter Texas from Mexico and cross the country in a northeasterly pattern. Lucky states along this trek will include Texas, Oklahoma, Arkansas, Missouri, Kentucky, Illinois, Indiana, Ohio, Michigan, Pennsylvania, New York, New Hampshire, Vermont, and Maine.

The next total solar eclipse to cross the United States from the Pacific to Atlantic oceans, like the 2017 eclipse, happens in only 28 years, on August 12, 2025. If these delays still seem too long, lunar eclipses will occur much sooner. Next year (January 31, 2018) will see a partial lunar eclipse pass over Arizona, and the next total lunar eclipse over the Grand Canyon state is less than two years away, on January 21, 2019 (the last one to cross Arizona was on October 8, 2014). In no time at all, crowds will again gather for these spectacular dances between the Sun, Moon, and Earth, and we will once more hear the chant, “let’s do it again.”

Success!

The Lowell Observatory Solar Eclipse Experience in Madras was by far the largest, most complex event Lowell Observatory has ever planned, requiring the time and talent of dozens of individuals and organizations. By all accounts it was a success, offering a breathtaking experience for participants while spreading global awareness about Lowell (and generating funds to support Lowell’s mission).

Lowell staff, volunteers, and supporters were in a jubilant mood after the eclipse event ended. Here, a group gathers at a nearby campground for a post-eclipse barbecue hosted by event co-leader Mica Gratton and her husband Jim.
Our eclipse events in Madras and on the Mars Hill campus would not have been possible without the support of our corporate sponsors. We’d like to offer a big thanks to them for helping us achieve that part of our mission that calls for us to “…maintain quality public education and outreach.”

Sponsors of The Lowell Observatory Great American Eclipse Experience in Madras, OR

Sponsors of The Great American Eclipse at Lowell Observatory in Flagstaff, AZ

Scan to go to www.lowell.edu
Find us on Social Media!
Facebook.com/LowellObservatory
Twitter: @LowellObs
Instagram: @LowellObservatory

The Lowell Observer is published quarterly by
Lowell Observatory, 1400 W Mars Hill Road, Flagstaff, AZ 86001
For comments about the newsletter, contact
Historian Kevin Schindler: kevin@lowell.edu | 928.233.3210
Layout and Design by Sarah Gilbert
Contents Copyright 2017 by Lowell Observatory ISSN 1054-0059

Eco-friendly printing by